



Fig. 1 Phylogenetic tree of mammals derived from Murphy et al. (2007) and Prasad et al. (2008). Lettered nodes A–F represent monotremes (A), marsupials (B), xenarthrans (C), afrotherians (D), laurasiatheres (E) and euarchontoglires (F). Pie-charts represent proportion of individuals in sample (given in parentheses adjacent to taxon names) with median thoracolumbar count (black), meristic deviations (grey) and homeotic deviations (white). The graph represents thoracolumbar coefficient of variation (CV, black diamonds, top scale) and percentage of specimens with vertebral anomalies (grey squares, bottom scale), also summarized in Table 2. Note that sample sizes for per cent anomalies are in some cases less than those for CV and proportion median thoracolumbar count (see Table 2). Asterisks represent species for which data have been added from the literature.

Does length of the ribcage correspond to the position of the sacrum?

Of the 32 mammals in our sample that exhibited variation in number of rib-bearing vertebrae and position of the sacrum, 24 showed a positive correlation between the two (Table 1). This is consistent with the comment of Bateson (1894) that ‘when the sacrum is far back, the

ribs also begin further back’, reflected also in the observations of Sawin (1937). However, there are seven taxa with sufficient presacral variation in which this correlation is not significant: the monotreme *Tachyglossus aculeatus* the marsupial *Phascolarctus cinereus* two afrotherians (*Procyon capensis*, *Macroscelides proboscideus*) and three euarchontoglires (*Lepilemur mustelinus*, *Onychomys leucogaster* and *Lepus europaeus*).